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SEQUENCE LISTING

<110> Itoh, Nobuyuki
Kavanaugh, W. Michael

<120> HUMAN FGF-23 GENE AND GENE EXPRESSION PRODUCTS

<130> PP-17150.001/201130.40901

<140> 09/801,968
<141> 2001-03-07

<160> 46

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 756
<212> DNA
<213> Mus musculus

<400> 1
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cacctgtaca cggctacagc caggaccagc tatcacctac agatccatag ggatggtcat     180
gtagatggca ccccccatca gaccatctac agtgccctga tgattacatc agaggacgcc     240
ggctctgtgg tgataacagg agccatgact cgaaggttcc tttgtatgga tctccacggc     300
aacatttttg gatcgcttca cttcagccca gagaattgca agttccgcca gtggacgctg     360
gagaatggct atgacgtcta cttgtcgcag aagcatcact acctggtgag cctgggccgc     420
gccaagcgca ttttccagcc gggcaccaac ccgccgccct tctcccagtt cctggctcgc     480
aggaacgagg tcccgctgct gcacttctac actgttcgcc cacggcgcca cacgcgcagc     540
gccgaggacc cacccgagcg cgacccactg aacgtgctca agccgcggcc ccgcgccacg     600
cctgtgcctg tatcctgctc tcgcgagctg ccgagcgcag aggaaggtgg ccccgcagcc     660
agcgatcctc tgggggtgct gcgcagaggc cgtggagatg ctcgcggggg cgcgggaggc     720
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<210> 2
<211> 251
<212> PRT
<213> Mus musculus

<400> 2
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 1               5                  10                  15
Cys Ser Leu Gly Thr Ala Arg Ala Tyr Pro Asp Thr Ser Pro Leu Leu
            20                  25                  30
Gly Ser Asn Trp Gly Ser Leu Thr His Leu Tyr Thr Ala Thr Ala Arg
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Thr Ser Tyr His Leu Gln Ile His Arg Asp Gly His Val Asp Gly Thr
    50                  55                  60
Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Thr Ser Glu Asp Ala
65                  70                  75                  80
Gly Ser Val Val Ile Thr Gly Ala Met Thr Arg Arg Phe Leu Cys Met
                85                  90                  95
Asp Leu His Gly Asn Ile Phe Gly Ser Leu His Phe Ser Pro Glu Asn
            100                 105                 110
Cys Lys Phe Arg Gln Trp Thr Leu Glu Asn Gly Tyr Asp Val Tyr Leu
        115                 120                 125
Ser Gln Lys His His Tyr Leu Val Ser Leu Gly Arg Ala Lys Arg Ile
    130                 135                 140
Phe Gln Pro Gly Thr Asn Pro Pro Pro Phe Ser Gln Phe Leu Ala Arg
145                 150                 155                 160
Arg Asn Glu Val Pro Leu Leu His Phe Tyr Thr Val Arg Pro Arg Arg
                165                 170                 175
His Thr Arg Ser Ala Glu Asp Pro Pro Glu Arg Asp Pro Leu Asn Val
            180                 185                 190
Leu Lys Pro Arg Pro Arg Ala Thr Pro Val Pro Val Ser Cys Ser Arg
        195                 200                 205
Glu Leu Pro Ser Ala Glu Glu Gly Gly Pro Ala Ala Ser Asp Pro Leu
    210                 215                 220
Gly Val Leu Arg Arg Gly Arg Gly Asp Ala Arg Gly Gly Ala Gly Gly
225                 230                 235                 240
Ala Asp Arg Cys Arg Pro Phe Pro Arg Phe Val
                245                 250
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<210> 3
<211> 756
<212> DNA
<213> Homo sapiens

<400> 3
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gtcctcagag cctatcccaa tgcctcccca ctgctcggct ccagctgggg tggcctgatc 120
cacctgtaca cagccacagc caggaacagc taccacctgc agatccacaa gaatggccat 180
gtggatggcg caccccatca gaccatctac agtgccctga tgatcagatc agaggatgct 240
ggctttgtgg tgattacagg tgtgatgagc agaagatacc tctgcatgga tttcagaggc 300
aacatttttg gatcacacta tttcgacccg gagaactgca ggttccaaca ccagacgctg 360
gaaaacgggt acgacgtcta ccactctcct cagtatcact tcctggtcag tctgggccgg 420
gcgaagagag ccttcctgcc aggcatgaac ccacccccgt actcccagtt cctgtcccgg 480
aggaacgaga tccccctaat tcacttcaac acccccatac cacggcggca cacccggagc 540
gccgaggacg actcggagcg ggacccccctg aacgtgctga agccccgggc ccggatgacc 600
ccggccccgg cctcctgttc acaggagctc ccgagcgccg aggacaacag cccgatggcc 660
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ccggaaggct gccgcccctt cgccaagttc atctag 756

<210> 4
<211> 251
<212> PRT
<213> Homo sapiens

<400> 4
Met Leu Gly Ala Arg Leu Arg Leu Trp Val Cys Ala Leu Cys Ser Val

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 1               5                  10                  15
Cys Ser Met Ser Val Leu Arg Ala Tyr Pro Asn Ala Ser Pro Leu Leu
            20                  25                  30
Gly Ser Ser Trp Gly Gly Leu Ile His Leu Tyr Thr Ala Thr Ala Arg
        35                  40                  45
Asn Ser Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala
    50                  55                  60
Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Arg Ser Glu Asp Ala
65                  70                  75                  80
Gly Phe Val Val Ile Thr Gly Val Met Ser Arg Arg Tyr Leu Cys Met
                85                  90                  95
Asp Phe Arg Gly Asn Ile Phe Gly Ser His Tyr Phe Asp Pro Glu Asn
            100                 105                 110
Cys Arg Phe Gln His Gln Thr Leu Glu Asn Gly Tyr Asp Val Tyr His
        115                 120                 125
Ser Pro Gln Tyr His Phe Leu Val Ser Leu Gly Arg Ala Lys Arg Ala
    130                 135                 140
Phe Leu Pro Gly Met Asn Pro Pro Pro Tyr Ser Gln Phe Leu Ser Arg
145                 150                 155                 160
Arg Asn Glu Ile Pro Leu Ile His Phe Asn Thr Pro Ile Pro Arg Arg
                165                 170                 175
His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp Pro Leu Asn Val
            180                 185                 190
Leu Lys Pro Arg Ala Arg Met Thr Pro Ala Pro Ala Ser Cys Ser Gln
        195                 200                 205
Glu Leu Pro Ser Ala Glu Asp Asn Ser Pro Met Ala Ser Asp Pro Leu
    210                 215                 220
Gly Val Val Arg Gly Gly Arg Val Asn Thr His Ala Gly Gly Thr Gly
225                 230                 235                 240
Pro Glu Gly Cys Arg Pro Phe Ala Lys Phe Ile
                245                 250
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<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense PCR primer

<400> 5
agcaccagcc actcagagca 20

<210> 6
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense PCR primer

<400> 6
cttccagcga ccctagatga 20

<210> 7
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer for mouse FGF-23

<400> 7
ctgatgatta catcagagga c 21

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer for mouse FGF-23

<400> 8
caccaggtag tgatgcttct 20

<210> 9
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer for mouse FGF-23

<400> 9
atccatacaa aggaaccttc g 21

<210> 10
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> adaptor primer

<400> 10
ccatcctaat acgactcact atagggc 27

<210> 11
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> adaptor primer

<400> 11
actcactata gggctcgagc ggc 23

<210> 12
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer for mouse FGF-23.

<400> 12
actcagtgct gtgcaatgct 20

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer for mouse FGF-23

<400> 13
gacctagacg aacctgggaa 20

<210> 14
<211> 216
<212> PRT
<213> Homo sapiens

<400> 14

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1				5				10					15		
Trp	Leu	Ala	Val	Ala	Gly	Arg	Pro	Leu	Ala	Phe	Ser	Asp	Ala	Gly	Pro
			20					25				30			
His	Val	His	Tyr	Gly	Trp	Gly	Asp	Pro	Ile	Arg	Leu	Arg	His	Leu	Tyr
		35					40					45			
Thr	Ser	Gly	Pro	His	Gly	Leu	Ser	Ser	Cys	Phe	Leu	Arg	Ile	Arg	Ala
	50					55					60				
Asp	Gly	Val	Val	Asp	Cys	Ala	Arg	Gly	Gln	Ser	Ala	His	Ser	Leu	Leu
65					70					75					80
Glu	Ile	Lys	Ala	Val	Ala	Leu	Arg	Thr	Val	Ala	Ile	Lys	Gly	Val	His
				85					90					95	
Ser	Val	Arg	Tyr	Leu	Cys	Met	Gly	Ala	Asp	Gly	Lys	Met	Gln	Gly	Leu
			100					105					110		
Leu	Gln	Tyr	Ser	Glu	Glu	Asp	Cys	Ala	Phe	Glu	Glu	Glu	Ile	Arg	Pro
		115					120					125			
Asp	Gly	Tyr	Asn	Val	Tyr	Arg	Ser	Glu	Lys	His	Arg	Leu	Pro	Val	Ser
	130					135					140				
Leu	Ser	Ser	Ala	Lys	Gln	Arg	Gln	Leu	Tyr	Lys	Asn	Arg	Gly	Phe	Leu
145					150					155					160
Pro	Leu	Ser	His	Phe	Leu	Pro	Met	Leu	Pro	Met	Val	Pro	Glu	Glu	Pro
				165					170					175	
Glu	Asp	Leu	Arg	Gly	His	Leu	Glu	Ser	Asp	Met	Phe	Ser	Ser	Pro	Leu
			180					185					190		
Glu	Thr	Asp	Ser	Met	Asp	Pro	Phe	Gly	Leu	Val	Thr	Gly	Leu	Glu	Ala

195 200 205
Val Arg Ser Pro Ser Phe Glu Lys
210 215

<210> 15
<211> 209
<212> PRT
<213> Homo sapiens

<400> 15
Met Asp Ser Asp Glu Thr Gly Phe Glu His Ser Gly Leu Trp Val Ser
1 5 10 15
Val Leu Ala Gly Leu Leu Leu Gly Ala Cys Gln Ala His Pro Ile Pro
20 25 30
Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg Tyr
35 40 45
Leu Tyr Thr Asp Asp Ala Gln Gln Thr Glu Ala His Leu Glu Ile Arg
50 55 60
Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser Pro Glu Ser Leu
65 70 75 80
Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly Val
85 90 95
Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly Ala Leu Tyr Gly
100 105 110
Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu Leu
115 120 125
Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro Leu
130 135 140
His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro Ala Pro Arg Gly
145 150 155 160
Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro Ala Leu Pro Glu
165 170 175
Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly Ser Ser Asp
180 185 190
Pro Leu Ser Met Val Gly Pro Ser Gln Gly Arg Ser Pro Ser Tyr Ala
195 200 205
Ser

<210> 16
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Residues which can be incorporated to allow myc
monoclonal antibody-based affinity purification.

<400> 16
Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 17
<211> 5

<212> PRT
<213> Artificial Sequence

<220>
<223> Preferred thrombin cleavage site.

<400> 17
Leu Val Pro Arg Gly
1 5

<210> 18
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Residues that bind to paramagentic steptavidin beads which facilitates purification of molecules.

<400> 18
Ser Ala Trp Arg His Pro Gln Phe Gly Gly
1 5 10

<210> 19
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Oligopeptide used for the production of an antibody to FGF-23 protein. (residues 175-189 of SEQ ID NO:4)

<400> 19
Arg Arg His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp
1 5 10

<210> 20
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Oligopeptide used for the production of an antibody to FGF-23 protein. (residues 51-67 of SEQ ID NO:4)

<400> 20
Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala Pro His
1 5 10 15
Gln

<210> 21

<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> E tag

<400> 21
Gly Ala Pro Val Pro Tyr Pro Asp Pro Leu Glu Pro Arg
 1   5   10

<210> 22
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> His6 tag

<400> 22
His His His His His His
 1   5

<210> 23
<211> 111
<212> PRT
<213> Homo sapiens

<400> 23
Ala Lys Arg Ala Phe Leu Pro Gly Met Asn Pro Pro Pro Tyr Ser Gln
 1   5   10   15
Phe Leu Ser Arg Arg Asn Glu Ile Pro Leu Ile His Phe Asn Thr Pro
            20   25   30
Ile Pro Arg Arg His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp
        35   40   45
Pro Leu Asn Val Leu Lys Pro Arg Ala Arg Met Thr Pro Ala Pro Ala
    50   55   60
Ser Cys Ser Gln Glu Leu Pro Ser Ala Glu Asp Asn Ser Pro Met Ala
65   70   75   80
Ser Asp Pro Leu Gly Val Val Arg Gly Gly Arg Val Asn Thr His Ala
                85   90   95
Gly Gly Thr Gly Pro Glu Gly Cys Arg Pro Phe Ala Lys Phe Ile
            100   105   110

<210> 24
<211> 35
<212> PRT
<213> Homo sapiens

<400> 24
Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro
 1   5   10   15
Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val
            20   25   30

Ser Ser Asp
35

<210> 25
<211> 34
<212> PRT
<213> Homo sapiens

<400> 25
Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln
1 5 10 15
Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val
20 25 30
His Ser

<210> 26
<211> 56
<212> PRT
<213> Homo sapiens

<400> 26
Ala Trp Tyr Leu Gly Leu Asp Lys Glu Gly Gln Val Met Lys Gly Asn
1 5 10 15
Arg Val Lys Lys Thr Lys Ala Ala Ala His Phe Leu Pro Lys Leu Leu
20 25 30
Glu Val Ala Met Tyr Gln Glu Pro Ser Leu His Ser Val Pro Glu Ala
35 40 45
Ser Pro Ser Ser Pro Pro Ala Pro
50 55

<210> 27
<211> 72
<212> PRT
<213> Homo sapiens

<400> 27
Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly Gln Ile Met Lys Gly Asn
1 5 10 15
Arg Val Lys Lys Thr Lys Pro Ser Ser His Phe Val Pro Lys Pro Ile
20 25 30
Glu Val Cys Met Tyr Arg Glu Pro Ser Leu His Glu Ile Gly Glu Lys
35 40 45
Gln Gly Arg Ser Arg Lys Ser Ser Gly Thr Pro Thr Met Asn Gly Gly
50 55 60
Lys Val Val Asn Gln Asp Ser Thr
65 70

<210> 28
<211> 78
<212> PRT
<213> Homo sapiens

<400> 28

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Gly Trp Tyr Leu Gly Leu Asn Lys Glu Gly Glu Ile Met Lys Gly Asn
 1               5                  10                  15
His Val Lys Lys Asn Lys Pro Ala Ala His Phe Leu Pro Lys Pro Leu
            20                  25                  30
Lys Val Ala Met Tyr Lys Glu Pro Ser Leu His Asp Leu Thr Glu Phe
        35                  40                  45
Ser Arg Ser Gly Ser Gly Thr Pro Thr Lys Ser Arg Ser Val Ser Gly
    50                  55                  60
Val Leu Asn Gly Gly Lys Ser Met Ser His Asn Glu Ser Thr
65                  70                  75

<210> 29
<211> 78
<212> PRT
<213> Homo sapiens

<400> 29
Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly Gln Ala Met Lys Gly Asn
 1               5                  10                  15
Arg Val Lys Lys Thr Lys Pro Ala Ala His Phe Leu Pro Lys Pro Leu
            20                  25                  30
Glu Val Ala Met Tyr Arg Glu Pro Ser Leu His Asp Val Gly Glu Thr
        35                  40                  45
Val Pro Lys Pro Gly Val Thr Pro Ser Lys Ser Thr Ser Ala Ser Ala
    50                  55                  60
Ile Met Asn Gly Gly Lys Pro Val Asn Lys Ser Lys Thr Thr
65                  70                  75

<210> 30
<211> 78
<212> PRT
<213> Homo sapiens

<400> 30
Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly Gln Ala Met Lys Gly Asn
 1               5                  10                  15
Arg Val Lys Lys Thr Lys Pro Ala Ala His Phe Leu Pro Lys Pro Leu
            20                  25                  30
Glu Val Ala Met Tyr Arg Glu Pro Ser Leu His Asp Val Gly Glu Thr
        35                  40                  45
Val Pro Lys Pro Gly Val Thr Pro Ser Lys Ser Thr Ser Ala Ser Ala
    50                  55                  60
Ile Met Asn Gly Gly Lys Pro Val Asn Lys Ser Lys Thr Thr
65                  70                  75

<210> 31
<211> 48
<212> PRT
<213> Homo sapiens

<400> 31
Gln Tyr Tyr Val Ala Leu Asn Lys Asp Gly Ser Pro Arg Glu Gly Tyr
 1               5                  10                  15
Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val
```

```
            20                  25                  30
Asp Pro Ser Lys Leu Pro Ser Met Ser Arg Asp Leu Phe His Tyr Arg
        35                  40                  45

<210> 32
<211> 68
<212> PRT
<213> Homo sapiens

<400> 32
Trp Phe Met Ala Phe Thr Arg Gln Gly Arg Pro Arg Gln Ala Ser Arg
 1               5                  10                  15
Ser Arg Gln Asn Gln Arg Glu Ala His Phe Ile Lys Arg Leu Tyr Gln
            20                  25                  30
Gly Gln Leu Pro Phe Pro Asn His Ala Glu Lys Gln Lys Gln Phe Glu
        35                  40                  45
Phe Val Gly Ser Ala Pro Thr Arg Arg Thr Lys Arg Thr Arg Arg Pro
    50                  55                  60
Gln Pro Leu Thr
65

<210> 33
<211> 59
<212> PRT
<213> Homo sapiens

<400> 33
Trp Tyr Val Gly Phe Thr Lys Lys Gly Arg Pro Arg Lys Gly Pro Lys
 1               5                  10                  15
Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys Arg Tyr Pro Lys
            20                  25                  30
Gly Gln Pro Glu Leu Gln Lys Pro Phe Lys Tyr Thr Thr Val Thr Lys
        35                  40                  45
Arg Ser Arg Arg Ile Arg Pro Thr His Pro Ala
    50                  55

<210> 34
<211> 76
<212> PRT
<213> Homo sapiens

<400> 34
Leu Pro Val Ser Leu Ser Ser Ala Lys Gln Arg Gln Leu Tyr Lys Asn
 1               5                  10                  15
Arg Gly Phe Leu Pro Leu Ser His Phe Leu Pro Met Leu Pro Met Val
            20                  25                  30
Pro Glu Glu Pro Glu Asp Leu Arg Gly His Leu Glu Ser Asp Met Phe
        35                  40                  45
Ser Ser Pro Leu Glu Thr Asp Ser Met Asp Pro Phe Gly Leu Val Thr
    50                  55                  60
Gly Leu Glu Ala Val Arg Ser Pro Ser Phe Glu Lys
65                  70                  75

<210> 35
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<211> 33
<212> PRT
<213> Homo sapiens

<400> 35
Trp Tyr Val Ala Leu Lys Arg Thr Gly Gln Tyr Lys Leu Gly Ser Lys
1 5 10 15
Thr Gly Pro Gly Gln Lys Ala Ile Leu Phe Leu Pro Met Ser Ala Lys
20 25 30
Ser

<210> 36
<211> 68
<212> PRT
<213> Homo sapiens

<400> 36
Leu Pro Leu His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro Ala
1 5 10 15
Pro Arg Gly Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro Ala
20 25 30
Leu Pro Glu Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly
35 40 45
Ser Ser Asp Pro Leu Ser Met Val Gly Pro Ser Gln Gly Arg Ser Pro
50 55 60
Ser Tyr Ala Ser
65

<210> 37
<211> 88
<212> PRT
<213> Homo sapiens

<400> 37
Leu Trp Tyr Val Ser Val Asn Gly Lys Gly Arg Pro Arg Arg Gly Phe
1 5 10 15
Lys Thr Arg Arg Thr Gln Lys Ser Ser Leu Phe Leu Pro Arg Val Leu
20 25 30
Asp His Arg Asp His Glu Met Val Arg Gln Leu Gln Ser Gly Leu Pro
35 40 45
Arg Pro Pro Gly Lys Gly Val Gln Pro Arg Arg Arg Arg Gln Lys Gln
50 55 60
Ser Pro Asp Asn Leu Glu Pro Ser His Val Gln Ala Ser Arg Leu Gly
65 70 75 80
Ser Gln Leu Glu Ala Ser Ala His
85

<210> 38
<211> 30
<212> PRT
<213> Homo sapiens

<400> 38

```
Met Phe Ile Ala Leu Ser Lys Asn Gly Lys Thr Lys Lys Gly Asn Arg
 1               5                  10                  15
Val Ser Pro Thr Met Lys Val Thr His Phe Leu Pro Arg Leu
            20                  25                  30

<210> 39
<211> 82
<212> PRT
<213> Homo sapiens

<400> 39
Glu Trp Tyr Val Ala Leu Asn Lys Arg Gly Lys Ala Lys Arg Gly Cys
 1               5                  10                  15
Ser Pro Arg Val Lys Pro Gln His Ile Ser Thr His Phe Leu Pro Arg
            20                  25                  30
Phe Lys Gln Ser Glu Gln Pro Glu Leu Ser Phe Thr Val Thr Val Pro
        35                  40                  45
Glu Lys Lys Lys Pro Pro Ser Pro Ile Lys Pro Lys Ile Pro Leu Ser
    50                  55                  60
Ala Pro Arg Lys Asn Thr Asn Ser Val Lys Tyr Arg Leu Lys Phe Arg
65                  70                  75                  80
Phe Gly


<210> 40
<211> 30
<212> PRT
<213> Homo sapiens

<400> 40
Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly Ser Lys
 1               5                  10                  15
Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile
            20                  25                  30

<210> 41
<211> 33
<212> PRT
<213> Homo sapiens

<400> 41
Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Arg Gly Lys
 1               5                  10                  15
Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala Ile
            20                  25                  30
Thr


<210> 42
<211> 67
<212> PRT
<213> Homo sapiens

<400> 42
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```
Trp Tyr Met Ala Phe Thr Arg Lys Gly Arg Pro Arg Lys Gly Ser Lys
 1               5                  10                  15
Thr Arg Gln His Gln Arg Glu Val His Phe Met Lys Arg Leu Pro Arg
            20                  25                  30
Gly His His Thr Thr Glu Gln Ser Leu Arg Phe Glu Phe Leu Asn Tyr
        35                  40                  45
Pro Pro Phe Thr Arg Ser Leu Arg Gly Ser Gln Arg Thr Trp Ala Pro
    50                  55                  60
Glu Pro Arg
65
```

<210> 43
<211> 48
<212> PRT
<213> Homo sapiens

<400> 43

```
Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr
 1               5                  10                  15
Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val
            20                  25                  30
Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser
        35                  40                  45
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<210> 44
<211> 48
<212> PRT
<213> Homo sapiens

<400> 44

```
Arg Tyr Phe Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Asp Gly Ala
 1               5                  10                  15
Arg Ser Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val
            20                  25                  30
Asp Pro Glu Arg Val Pro Glu Leu Tyr Lys Asp Leu Leu Met Tyr Thr
        35                  40                  45
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<210> 45
<211> 32
<212> PRT
<213> Homo sapiens

<400> 45

```
Met Phe Leu Ala Leu Asp Arg Arg Gly Gly Pro Arg Pro Gly Gly Arg
 1               5                  10                  15
Thr Arg Arg Tyr His Leu Ser Ala His Phe Leu Pro Val Leu Val Ser
            20                  25                  30
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<210> 46
<211> 22
<212> PRT
<213> Artificial Sequence

<220>

<223> consensus sequence

<400> 46

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Trp Tyr Val Ala Leu Lys Gly Pro Arg Lys Gly Arg Thr Lys Lys Ala
 1               5                  10                  15
His Phe Leu Pro Arg Val
            20
```